September 2014

The Economic Impact of the Atlantic Coast Pipeline in West Virginia, Virginia, and North Carolina

The one-time construction activity of the Atlantic Coast Pipeline can inject an annual average of $456.3 million into the economy of the three-state combined region of West Virginia, Virginia, and North Carolina, supporting 2,873 annual jobs in the region from 2014 to 2019. When the pipeline is in full operation, the project is estimated to have an annual impact in the three-state region of $69.2 million that can support 271 regional jobs from 2019 onward. The project can also generate significant tax revenue for three state governments. This report does not quantify other significant benefits that will be derived from construction of the project, including additional opportunities for new manufacturing, greater stability in energy prices, and environmental improvements through the increased use of cleaner-burning natural gas as a source of electric generation.

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1. Executive Summary

The Atlantic Coast Pipeline (ACP) is a major interstate natural gas pipeline construction and operation initiative proposed by Dominion Resources (Dominion) and three other major U.S. energy companies—Duke Energy, Piedmont Natural Gas, and AGL Resources. The project involves constructing about 550 miles of natural gas pipeline, as well as three compressor stations and other associated facilities across three states—West Virginia, Virginia, and North Carolina. Total capital expenditures for this project are estimated to be $4.6 billion.[1] The development of ACP will occur from 2014 to 2019, with operation commencing in late 2018. A project of such magnitude will have significant impact in the three states along the pipeline.[2]

The impact of the Atlantic Coast Pipeline in the three-state combined region is as follows:

- From 2014 through 2019, capital spending on ACP can generate an annual average of $456.3 million in economic impact (including direct, indirect, and induced) in the three-state region, supporting 2,873 jobs per year. The cumulative impact of construction is estimated to be $2.7 billion that can support 17,240 cumulative jobs in the three-state region.

- From 2019 onward, ongoing operation can produce a total of $69.2 million in annual economic impact (including direct, indirect, and induced) in the three-state region, supporting a total of 271 jobs annually.

- Ongoing operation of the pipeline can generate annual tax revenue of $418,443 from 2019 onward for the three state governments. Capital expenditure can also generate an annual average of $4.2 million in total tax revenue for the three state governments from 2014 to 2019.

The economic impact of the Atlantic Coast Pipeline in the state of West Virginia is as follows:

- Among total capital expenditure of $4.6 billion, an estimated $882.6 million will be spent in West Virginia. From 2014 through 2019, capital spending on ACP can generate an annual average of $79.8 million in economic impact (including direct, indirect, and induced) in West Virginia, supporting 516 jobs per year. The cumulative impact of construction is estimated to be $478.7 million that can support 3,093 cumulative jobs in the state.

- From 2019 onward, ongoing operation can produce a total of $15.6 million in annual economic impact (including direct, indirect, and induced) in West Virginia, supporting a total of 74 jobs annually.

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[1] The $4.6 billion in capital expenditures used in this study is at the lower end of the range of $4.5 billion to $5 billion stated by the partnership in its September 2, 2014 news release on the project. The cost allocations used in this study are based on reasonable estimates at the time of the development of this report and are subject to modification as the project advances.
[2] The study area is defined as the states of West Virginia, Virginia, North Carolina, and the three-state combined region.

- Ongoing operation of the project can generate annual tax revenue of $113,678 from 2019 onward for the state government. Capital expenditure can also generate an annual average of $661,059 in total tax revenue for the state from 2014 to 2019.

The economic impact of the Atlantic Coast Pipeline in the state of Virginia is as follows:

- Of $4.6 billion in total capital expenditure, $2.5 billion is estimated to be spent in Virginia. From 2014 through 2019, capital spending on ACP can generate an annual average of $236.5 million in economic impact (including direct, indirect, and induced) in Virginia, supporting 1,462 jobs per year. The cumulative impact of construction is estimated to be $1.4 billion that can support 8,774 cumulative jobs in the state.

- From 2019 onward, ongoing operation of ACP can produce a total of $37.8 million in annual economic impact (including direct, indirect and induced) in Virginia, supporting a total of 118 jobs annually.

- Ongoing operation can generate annual tax revenue of $233,027 from 2019 onward for the state government. Capital expenditure can also generate an annual average of $2.4 million in total tax revenue for the state from 2014 to 2019.

The economic impact of the Atlantic Coast Pipeline in the state of North Carolina is as follows:

- Of the total $4.6 billion in capital expenditure, $1.2 billion is estimated to be spent in North Carolina. From 2014 through 2019, capital spending on ACP can generate an annual average of $113.4 million in economic impact (including direct, indirect, and induced) in North Carolina, supporting 738 jobs per year. The cumulative impact of construction is estimated to be $680.2 million that can support 4,426 cumulative jobs in the state.

- From 2019 onward, ongoing operation can produce a total of $11.7 million in annual economic impact (including direct, indirect, and induced) in North Carolina, supporting a total of 52 jobs annually.

- Ongoing operation can generate annual tax revenue of $71,738 from 2019 onward for the state government. Capital expenditure can also generate an annual average of $1.1 million in total tax revenue for the state from 2014 to 2019.

Additionally, this study does not include estimates, on either a statewide or local basis, of local property taxes on Atlantic Coast Pipeline facilities. However, these taxes are likely to provide an important and stable source of revenue for local governments once the pipeline begins operations.

Economic impact of the Atlantic Coast Pipeline in all three states as well as the combined region is summarized in Table 1.1.

Table 1.1: Atlantic Coast Pipeline Impact Summary

			Direct Impact	Total Impact	State Tax Revenue
West Virginia	Onetime Capital Expenditure (Annual Average, 2014-2019)	Spending ($Million)	$49.3	$79.8	$661,059
		Employment	299	516	
	Ongoing Operation (Annual 2019 Onward)	Spending ($Million)	$9.4	$15.6	$113,678
		Employment	24	74	
Virginia	Onetime Capital Expenditure (Annual Average, 2014-2019)	Spending ($Million)	$140.2	$236.5	$2,439,441
		Employment	827	1,462	
	Ongoing Operation (Annual 2019 Onward)	Spending ($Million)	$24.3	$37.8	$233,027
		Employment	39	118	
North Carolina	Onetime Capital Expenditure (Annual Average, 2014-2019)	Spending ($Million)	$68.3	$113.4	$1,063,354
		Employment	430	738	
	Ongoing Operation (Annual 2019 Onward)	Spending ($Million)	$7.6	$11.7	$71,738
		Employment	18	52	
Three-State Regional	**Onetime Capital Expenditure (Annual Average, 2014-2019)**	**Spending ($Million)**	**$257.8**	**$456.3**	**$4,163,854**
		Employment	**1,557**	**2,873**	
	Ongoing Operation (Annual 2019 Onward)	**Spending ($Million)**	**$41.3**	**$69.2**	**$418,443**
		Employment	**82**	**271**	

Note: Numbers may not sum due to rounding

Source: Chmura Economics & Analytics

2. Background

The Atlantic Coast Pipeline (ACP) is a major interstate natural gas pipeline construction and operation initiative proposed by Dominion Resources (Dominion) and three other major U.S. energy partners—Duke Energy, Piedmont Natural Gas, and AGL Resources. The project involves constructing about 550 miles of natural gas pipeline, as well as compressor stations and associated facilities across three states—West Virginia, Virginia, and North Carolina (Figure 2.1). This pipeline will transport and supply shale gas from West Virginia to major customers such as power plants and other businesses in Virginia and North Carolina. By providing a new independent gas pipeline in the region, the project can increase flexibility and reliability of the gas supply for businesses and residents. More importantly, an alternative gas pipeline will allow for competition, thus potentially lowering gas prices for customers. In addition, the gas pipeline will pass through new areas which could generate economic development opportunities for communities along the pipeline.

The project team plans to submit a pre-filing request to the Federal Energy Regulatory Commission (FERC) in Fall 2014 and file an official FERC application in Summer 2015. Upon approval, the construction would start in Fall 2016 with completion in late 2018.

An economic and fiscal impact assessment was requested by Dominion to understand the impact of the Atlantic Coast Pipeline in West Virginia, Virginia, and North Carolina. Dominion contracted Chmura Economics & Analytics (Chmura) to conduct this study.

The remainder of this report is organized as follows:

- Section 3 explains the Chmura methodology for economic and fiscal impact analysis
- Section 4 analyzes the economic and fiscal impact of the Atlantic Coast Pipeline in the three-state combined region
- Section 5 estimates the economic and fiscal impact of the Atlantic Coast Pipeline in the individual states of West Virginia, Virginia, and North Carolina
- Section 6 offers a summary and conclusion

Below is a map of the Atlantic Coast Pipeline in the study corridor.

Figure 2.1: Map of the Atlantic Coast Pipeline

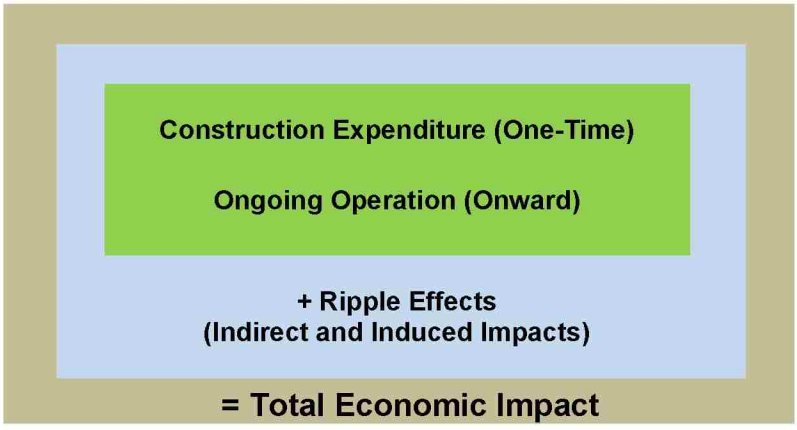
3. Economic Impact Methodology

The economic impact of the Atlantic Coast Pipeline on regional and state economies will occur in two phases:

1. The one-time economic impact from project construction. The impact includes activities such as: construction of the new pipeline, compressor stations and associated facilities; design and preparation of the project; and equipment installation.
2. The ongoing operation of the natural gas pipeline. The impact comes primarily from revenue generated from transporting and distributing natural gas to businesses and residential customers.

While the two components above constitute the direct economic impact of the Atlantic Coast Pipeline, total economic impact also includes ripple effects from the direct impact. Ripple effects, categorized as indirect and induced impacts,[3] measure secondary benefits that can be generated by project construction and operation. Using pipeline construction as an example, the indirect impact is increased sales and employment that occur for local businesses that sell supplies and services to the construction companies, such as truck transportation, construction materials suppliers, and equipment rentals. The induced impact is increased sales and employment that occur in local communities when construction workers spend their wages. The benefactors of induced impact are primarily consumer-related businesses such as retail stores, restaurants, and personal services.[4]

Figure 3.1: Economic Impact Analysis Framework



[3] See the appendix for terms and definitions.
[4] In analyzing the state impact, ripple effects only capture benefits to state businesses from direct spending in each state.

Background data for the direct impact, such as operational cost and capital expenditure, were provided by Dominion. Indirect and induced impacts were estimated with IMPLAN Pro[5] software after the direct impact was identified. Total operational cost and capital expenditure were input into the various IMPLAN model sectors to estimate indirect and induced impacts for each sector. These impacts were aggregated to yield estimates of the overall economic impact of the Atlantic Coast Pipeline in three states, and the three-state combined region.

In addition to the spending and employment impact, this study also estimates the fiscal impact of the Atlantic Coast Pipeline on state governments. In terms of the ongoing operation of the gas pipeline, state governments will collect individual and corporate income tax revenue from the project. During construction, three state governments can benefit from individual and corporate income tax from capital expenditure, paid by contractors.

[5] *IMPLAN Professional* is an economic impact assessment modeling system developed by the Minnesota IMPLAN Group that is often used by economists to build economic models that estimate the impacts of economic changes in local economies.

4. Economic Impact of the Atlantic Coast Pipeline in the Three-State Region

4.1. One-Time Economic Impact from Construction

The Atlantic Coast Pipeline is an undertaking that requires a significant amount of capital investment spanning multiple years. The project involves constructing 548 miles of interstate natural gas pipeline. More than half the pipeline (292 miles) will be situated in Virginia, 78 miles will be in West Virginia, and 178 miles will be in North Carolina. Outside the main pipeline, the project also involves construction of three compressor stations (one in each state), as well as eight measurement and regulation (M&R) stations. West Virginia will host two M&R stations, while Virginia and North Carolina will each have three M&R stations.

Table 4.1: Atlantic Coast Pipeline Structure Summary

	West Virginia	Virginia	North Carolina	Three-State Total
Pipeline (Miles)	78.0	292.1	178.0	548.1
Compressor Stations	1	1	1	3
Measurement & Regulation (M&R) Stations	2	3	3	8

Source: Dominion

Preliminary estimates show that the total cost of the project is estimated to be $4.6 billion. Spending is expected to occur from 2014 to 2019, with the largest portion spent in both 2017 and 2018 (Table 4.2). In terms of geographic distribution, Virginia will receive over half of the total capital investment since half of the pipeline will be located there.

Table 4.2: Capital Investment of the Atlantic Coast Pipeline

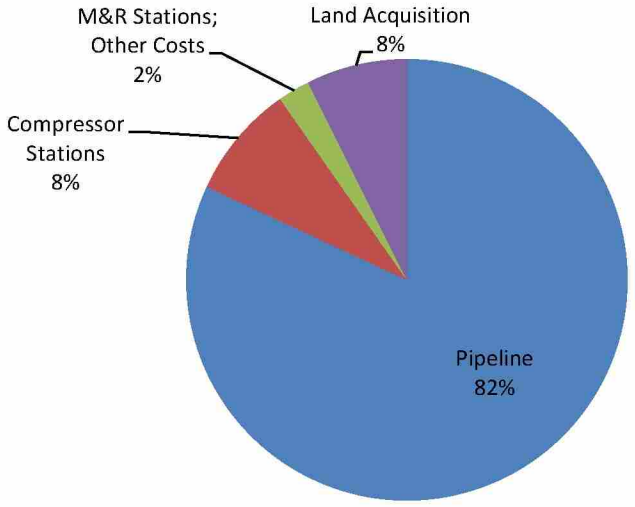
	2014	2015	2016	2017	2018	2019	Total
West Virginia	$5.8	$34.4	$135.6	$260.6	$437.7	$8.5	$882.6
Virginia	$18.6	$107.0	$416.7	$670.3	$1,233.1	$24.9	$2,470.7
North Carolina	$8.8	$51.4	$198.1	$345.0	$616.8	$12.9	$1,233.1
Total	$33.2	$192.9	$750.4	$1,276.0	$2,287.6	$46.3	$4,586.4

Source: Dominion
Note: Numbers may not sum due to rounding

Total capital expenditure will be used to acquire land, construct the pipeline, and construct the compressor and M&R stations. Of the total capital expenditure, 82% is expected to be spent on constructing pipelines (including the cost of purchasing pipes), 8% on the construction of compressor

stations, and 2% on the construction of M&R stations (Figure 4.1). In addition, it is expected that over $300 million would be spent (8% of total cost) to acquire land in the three states.[6]

Figure 4.1: Construction Cost Breakdown



Source: Dominion

Although the project team will use regional firms for supplies and services whenever possible, not every product and service needed for pipeline construction is available in West Virginia, Virginia, or North Carolina. Consequently, some of the services and products will be purchased from firms outside the three-state region. Chmura used information from Dominion to estimate the percentage of capital expenditure that will be spent within the region. At the state level, for example, since the pipeline mills will be located outside the three-state region, the purchase of gas pipes will go to firms outside the region. However, it is estimated that 50% of construction labor cost will be spent within the region. For the compressor and M&R stations, it is estimated that 5% of the equipment will be purchased from businesses located within the three-state region.[7]

Table 4.3 details the estimated one-time economic impact of capital spending of the Atlantic Coast Pipeline in the three-state region.[8] From 2014 to 2019, estimated spending activities associated with the project could generate $1.5 billion in cumulative direct economic impact in the region. This would directly create 9,343 cumulative jobs during the construction period. The indirect impact in the three-state region is estimated to total $551.7 million and could support 3,380 cumulative jobs from 2014 through 2019 for firms supporting pipeline and related facility construction, such as site preparation and truck transportation. The induced impact is expected to produce $639.3 million in spending that would support 4,517 cumulative jobs in the three-state region during the construction phase. The induced jobs are

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[6] Source: Dominion. The land cost represents a transfer of property whose economic impact is uncertain. It is a best practice in economic impact studies to exclude land cost in the economic impact analysis.
[7] Source: Dominion.
[8] The economic impact in each state is analyzed in Section 5.

concentrated in consumer service-related industries such as restaurants, professional and personal services, and retail stores.

Table 4.3: One-Time Economic Impact of Construction of the Atlantic Coast Pipeline in the Three-State Region

		Direct	Indirect	Induced	Total
Total (2014-2019)	Spending ($Million)	$1,546.9	$551.7	$639.3	$2,737.9
	Employment	9,343	3,380	4,517	17,240
Annual Average (2014-2019)	Spending ($Million)	$257.8	$91.9	$106.6	$456.3
	Employment	1,557	563	753	2,873

Note: Impacts are measured in the year when they occur. Numbers may not sum due to rounding

Source: IMPLAN Pro 2012, Dominion, and Chmura

The above numbers represent the six-year cumulative economic impact. On an annual average basis, construction activities of the Atlantic Coast Pipeline are expected to inject $456.3 million (including direct, indirect, and induced impacts) into the economy of the three-state region and support 2,873 jobs from 2014 through 2019. Of this, is an estimated annual direct impact of $257.8 million in spending that could support 1,557 jobs. The annual indirect impact is estimated to be $91.9 million in spending that could support 563 jobs, and the annual induced impact is estimated to be $106.6 million in spending that could support 753 jobs. The economic impact of each year varies, depending on the investment volume and spending categories.

4.2. Economic Impact of Ongoing Operation

From November 2018 onward, the economic impact of the Atlantic Coast Pipeline will come from its ongoing operation. The annual economic impact is estimated for 2019, which is the first full year of operation. The project will employ approximately 82 permanent workers in the region—24 in West Virginia, 39 in Virginia, and 18 in North Carolina.[9] Those jobs will be located at the compressor stations as well as in the transmission offices. To simulate the economic effects of ongoing project operation, modeling is based upon IMPLAN sector 337, which corresponds to the North American Industry Classification System (NAICS) code 486: pipeline transportation.

The economic impact of the Atlantic Coast Pipeline's ongoing operation is presented in Table 4.4. The estimated total annual economic impact (direct, indirect, and induced) is $69.2 million (measured in 2019 dollars), which could support 271 jobs in the three-state region. In terms of direct impact, ongoing operation is estimated to have an annual direct spending impact of $41.3 million[10] while employing 82 workers. An additional indirect impact of $15.3 million and 99 jobs will benefit other regional businesses

[9] Source: Dominion.

[10] The direct spending figure represents gross sales of the Atlantic Coast Pipeline estimated by the IMPLAN model, with the input of total labor and operational cost supplied by Dominion. The model treats ACP as a stand-alone business. As a result, this figure includes spending on labor, equipment maintenance, routine capital expenditure, supplies, and profits.

that support operation, such as equipment maintenance and repair. The number of jobs created due to the induced impact is estimated to be 90 with associated annual spending of $12.6 million. The induced impact is generated when employees spend their income at restaurants, personal services, retail stores, and similar establishments.

Table 4.4: Annual Economic Impact of the Atlantic Coast Pipeline's Ongoing Operation in the Three-State Region (2019 Dollars)

	Direct	Indirect	Induced	Total Impact
Spending ($Million)	$41.3	$15.3	$12.6	$69.2
Employment	82	99	90	271

Note: Numbers may not sum due to rounding

Source: IMPLAN Pro 2012, Dominion, and Chmura

4.3. Fiscal Impact for West Virginia, Virginia, and North Carolina State Governments

Capital expenditure and ongoing operation of the Atlantic Coast Pipeline will also generate tax revenue for the state governments of West Virginia, Virginia, and North Carolina. Major tax revenue for the state governments will come from state individual and corporate income tax. Table 4.5 illustrates the tax rates for the three states.[11] To be conservative, only tax revenue from the direct impact is estimated in this section.[12]

Table 4.5: State Income Tax Rates

	Individual Rate	Corporate Rate
West Virginia	3.0%-6.5%	6.50%
Virginia	2.0%-5.75%	6.00%
North Carolina	5.80% in 2014, 5.75% from 2015 onward	6.00% in 2014, 5.00% from 2015 onward

Source: The Tax Foundation

4.3.1. Tax Revenue from Capital Expenditure

During the construction phase, the three state governments are expected to receive a total of $24.0 million in individual income tax revenue and $1.0 million in corporate income tax revenue from 2014 through 2019 (Table 4.6). To arrive at this estimate, Chmura first estimated the percentage of total capital expenditure that is paid as labor cost and then estimated the percentage that would be corporate

[11] Virginia and West Virginia have a progressive individual income tax, with earnings in different income brackets subject to different tax rates. The rate used in this study is based on the assumed wages of construction and pipeline workers. North Carolina passed a tax reform in 2013 which reduced corporate income tax rate, and implemented a flat individual income tax rate.

[12] This approach is recommended by Burchell and Listokin in *The Fiscal Impact Handbook*. Source: Burchell, R.W. and D. Listokin. 1978. The Fiscal Impact Handbook: Estimating Local Costs and Revenues of Land Development. Center for Urban Policy Research. New Brunswick, NJ: Rutgers, The State University of New Jersey.

profit for businesses involved in the Atlantic Coast Pipeline. For example, for construction businesses, the IMPLAN model estimates that 34.5% of total revenue is paid as employment compensation while 1.4% of total revenue is profit. Chmura applied those percentages to the total capital expenditure before applying state individual and corporate income tax rates.

Table 4.6: Tax Revenue for State Government from Capital Expenditure

		Cumulative	Annual Average
West Virginia	Individual Income Tax	$3,813,782	$635,630
	Corporate Income Tax	$152,574	$25,429
	State Total	**$3,966,356**	**$661,059**
Virginia	Individual Income Tax	$14,108,726	$2,351,454
	Corporate Income Tax	$527,919	$87,986
	State Total	**$14,636,645**	**$2,439,441**
North Carolina	Individual Income Tax	$6,063,321	$1,010,554
	Corporate Income Tax	$316,805	$52,801
	State Total	**$6,380,126**	**$1,063,354**
Three-State Total	Individual Income Tax	$23,985,829	$3,997,638
	Corporate Income Tax	$997,298	$166,216
	Regional Total	**$24,983,127**	**$4,163,854**

Source: Chmura Economics & Analytics

On an annual average basis, the three state governments can receive $4.2 million in tax revenue per year from capital investment activities from 2014 through 2019. Of this total, annual tax revenue of $2.4 million will go to Virginia's state government, $1.1 million to North Carolina's state government, and $0.7 million to West Virginia's state government.

4.3.2. Tax Revenue from Operation

After the Atlantic Coast Pipeline is in operation, the states through which it traverses are expected to receive $418,443 per year from individual income tax—based on the estimated wages of workers in compressor stations, transmission offices, and corporate offices. Among the three state governments, Virginia would receive $233,027 per year, West Virginia would receive $113,678 per year, and North Carolina would receive $71,838 per year.[13]

[13] The corporate income tax paid by ACP to the three state governments is not included in this analysis.

Table 4.7: Tax Revenue for State Governments from Pipeline Operation

		Annual Average (2019 Onward)
West Virginia	Individual Income Tax	$113,678
Virginia	Individual Income Tax	$233,027
North Carolina	Individual Income Tax	$71,838
Three-State Total	**Individual Income Tax**	**$418,443**

Source: Chmura Economics & Analytics

5. Economic Impact of the Atlantic Coast Pipeline in Individual States

5.1. Economic Impact in West Virginia

5.1.1. One-Time Economic Impact of Construction

Of $4.6 billion in total capital expenditure, $882.6 million is expected to be spent in the state of West Virginia. Using the same assumptions of in-state/out-of-state spending, Table 5.1 details the estimated one-time economic impact of capital spending in West Virginia. From 2014 through 2019, it is estimated that spending activities associated with the project could generate $295.9 million in cumulative direct economic impact in the state. This would directly create 1,796 cumulative jobs during the construction period. The indirect impact in West Virginia is estimated to total $84.0 million and could support 531 cumulative jobs from 2014 through 2019 for firms supporting the pipeline and related facility construction. The induced impact is expected to produce $98.8 million in spending that would support 767 cumulative jobs in West Virginia. On an annual average basis, construction activities of the Atlantic Coast Pipeline are expected to inject $79.8 million (including direct, indirect, and induced impacts) into the economy of West Virginia and support 516 jobs from 2014 to 2019.

Table 5.1: One-Time Economic Impact of Construction of the Atlantic Coast Pipeline in West Virginia

		Direct	Indirect	Induced	Total
Total (2014-2019)	Spending ($Million)	$295.9	$84.0	$98.8	$478.7
	Employment	1,796	531	767	3,093
Annual Average (2014-2019)	Spending ($Million)	$49.3	$14.0	$16.5	$79.8
	Employment	299	88	128	516

Note: Impacts are measured in the year when they occur. Numbers may not sum due to rounding

Source: IMPLAN Pro 2012, Dominion, and Chmura

5.1.2. Economic Impact of Ongoing Operation

The economic impact of the Atlantic Coast Pipeline's ongoing operation in West Virginia is presented in Table 5.2. The estimated total annual economic impact (direct, indirect, and induced) is $15.6 million (measured in 2019 dollars), which could support 74 jobs in the state. In terms of direct impact, ongoing operation of the project is estimated to have an annual direct impact of $9.4 million while employing 24 workers.[14] The employment represents workers located in the compressor station as well as those in transmission support and in corporate positions. An additional indirect impact of $3.8 million and 26 jobs

[14] The West Virginia portion of the pipeline may not directly generate cash revenue. This number is estimated by allocating overall revenue into three states based on employment and operational cost.

will benefit other West Virginia businesses that support the operation. The number of jobs created due to the induced impact is expected to be 24 with an associated annual spending of $2.4 million.

Table 5.2: Annual Economic Impact of the Atlantic Coast Pipeline's Ongoing Operation in West Virginia (2019 Dollars)

	Direct	Indirect	Induced	Total Impact
Spending ($Million)	$9.4	$3.8	$2.4	$15.6
Employment	24	26	24	74

Note: Numbers may not sum due to rounding

Source: IMPLAN Pro 2012, Dominion, and Chmura

5.1.3. Fiscal Impact for the State Government

Capital expenditure and ongoing operation of the Atlantic Coast Pipeline will also generate tax revenue for West Virginia's state government.

During the construction phase from 2014 through 2019, the state government is expected to receive an annual average of $635,630 in individual income tax revenue and $25,429 in corporate income tax revenue, for a total of $661,059 per year (Table 5.3). After the pipeline is in operation, the West Virginia government is expected to receive $113,678 per year from individual income tax.

Table 5.3: Tax Revenue for State Government-West Virginia

		Cumulative	Annual Average
Construction (2014-2019)	Individual Income Tax	$3,813,782	$635,630
	Corporate Income Tax	$152,574	$25,429
	Total Construction	**$3,966,356**	**$661,059**
Operation (2019 Onward)	Individual Income Tax		$113,678
	Total Operation		**$113,678**

Source: Chmura Economics & Analytics

5.2. Economic Impact in Virginia

5.2.1. One-Time Economic Impact of Construction

Of the total $4.6 billion in capital expenditure, $2.5 billion is expected to be spent in the state of Virginia. Using the same assumptions of in-state/out-of-state spending, Table 5.4 details the project's estimated one-time economic impact of capital spending in Virginia. From 2014 through 2019, it is estimated that spending activities associated with the project can generate $841.3 million in cumulative direct economic impact in the state. This would directly create 4,965 cumulative jobs during the construction period. The indirect impact in Virginia is estimated to total $266.1 million which could support 1,602 cumulative jobs from 2014 through 2019 for firms supporting the pipeline and related facility construction. The induced impact is expected to produce $311.5 million in spending that would support 2,207 cumulative jobs in Virginia. On an annual average basis, construction activities of the Atlantic Coast Pipeline are expected to inject $236.5 million (including direct, indirect, and induced impacts) into the economy of Virginia and support 1,462 jobs from 2014 to 2019.

Table 5.4: One-Time Economic Impact of Construction of the Atlantic Coast Pipeline in Virginia

		Direct	Indirect	Induced	Total
Total (2014-2019)	Spending ($Million)	$841.3	$266.1	$311.5	$1,418.9
	Employment	4,965	1,602	2,207	8,774
Annual Average (2014-2019)	Spending ($Million)	$140.2	$44.4	$51.9	$236.5
	Employment	827	267	368	1,462

Note: Impacts are measured in the year when they occur. Numbers may not sum due to rounding

Source: IMPLAN Pro 2012, Dominion, and Chmura

5.2.2. Economic Impact of Ongoing Operation

The economic impact of the Atlantic Coast Pipeline's ongoing operation in Virginia is presented in Table 5.5. The estimated total annual economic impact (direct, indirect, and induced) of ongoing operation is $37.8 million (measured in 2019 dollars), which can support 118 jobs in the state. The estimated annual direct impact is $24.3 million, supporting 39 jobs. An additional indirect impact of $7.6 million and 42 jobs will benefit other regional businesses that support ACP operation. The number of positions created due to the induced impact is estimated to be 37 with associated annual spending of $5.9 million.

Table 5.5: Annual Economic Impact of the Atlantic Coast Pipeline's Ongoing Operation in Virginia (2019 Dollars)

	Direct	Indirect	Induced	Total Impact
Spending ($Million)	$24.3	$7.6	$5.9	$37.8
Employment	39	42	37	118

Note: Numbers may not sum due to rounding

Source: IMPLAN Pro 2012, Dominion, and Chmura

5.2.3. Fiscal Impact for the State Government

Similarly, capital expenditure and ongoing operation of the Atlantic Coast Pipeline will generate tax revenue for Virginia's state government.

During the construction phase from 2014 through 2019, the state government is expected to receive an annual average of $2.4 million in individual income tax revenue and $87,986 in corporate income tax revenue, for a total of $2.4 million per year (Table 5.6). After the pipeline is in operation, the Virginia state government is expected to receive $233,027 per year from individual income tax.

Table 5.6: Tax Revenue for State Government-Virginia

		Cumulative	Annual Average
Construction (2014-2019)	Individual Income Tax	$14,108,726	$2,351,454
	Corporate Income Tax	$527,919	$87,986
	Total Construction	**$14,636,645**	**$2,439,441**
Operation (2019 Onward)	Individual Income Tax		$233,027
	Total Operation		**$233,027**

Source: Chmura Economics & Analytics

5.3. Economic Impact in North Carolina

5.3.1. One-Time Economic Impact of Construction

Of total capital expenditure of $4.6 billion, an estimated $1.2 billion will be spent in the state of North Carolina. Using the same assumptions of in-state/out-of-state spending, Table 5.7 details the estimated one-time economic impact of capital spending in North Carolina. From 2014 through 2019, it is estimated that spending activities associated with the project could generate $409.7 million in cumulative direct economic impact in the state. This would directly create 2,582 cumulative jobs during the construction period. The indirect impact in North Carolina is estimated to total $128.9 million and can support 812 cumulative jobs from 2014 through 2019. The induced impact is expected to produce $141.6 million in spending that would support 1,032 cumulative jobs in North Carolina. On an annual average basis, construction activities of the Atlantic Coast Pipeline are expected to inject $113.4 million (including direct, indirect, and induced impacts) into the economy of North Carolina and support 738 jobs from 2014 through 2019.

Table 5.7: One-Time Economic Impact of Construction of the Atlantic Coast Pipeline in North Carolina

		Direct	Indirect	Induced	Total
Total (2014-2019)	Spending ($Million)	$409.7	$128.9	$141.6	$680.2
	Employment	2,582	812	1,032	4,426
Annual Average (2014-2019)	Spending ($Million)	$68.3	$21.5	$23.6	$113.4
	Employment	430	135	172	738

Note: Impacts are measured in the year when they occur. Numbers may not sum due to rounding

Source: IMPLAN Pro 2012, Dominion, and Chmura

5.3.2. Economic Impact of Ongoing Operation

The economic impact of the Atlantic Coast Pipeline's ongoing operation in North Carolina is presented in Table 5.8. The estimated total annual economic impact (direct, indirect, and induced) is $11.7 million (measured in 2019 dollars), which can support 52 jobs in the state. In terms of direct impact, the ongoing operation is estimated to have an annual direct impact of $7.6 million while employing 18 workers. An additional indirect impact of $2.2 million and 18 jobs will benefit other regional businesses that support operation. The number of jobs created due to the induced impact amounts to 16 with associated annual spending of $1.9 million.

Table 5.8: Annual Economic Impact of the Atlantic Coast Pipeline's Ongoing Operation in North Carolina (2019 Dollars)

	Direct	Indirect	Induced	Total Impact
Spending ($Million)	$7.6	$2.2	$1.9	$11.7
Employment	18	18	16	52

Note: Numbers may not sum due to rounding

Source: IMPLAN Pro 2012, Dominion,, and Chmura

5.3.3. Fiscal Impact for the State Government

For North Carolina, during the construction phase from 2014 through 2019, the state government is expected to receive an annual average of $1.0 million in individual income tax revenue and $52,801 in corporate income tax revenue, for a total of $1.1 million per year (Table 5.9). After the pipeline is in operation, the North Carolina state government is expected to receive $71,738 per year from individual income tax.

Table 5.9: Tax Revenue for State Government- North Carolina

		Cumulative	Annual Average
Construction (2014-2019)	Individual Income Tax	$6,063,321	$1,010,554
	Corporate Income Tax	$316,805	$52,801
	Total Construction	**$6,380,126**	**$1,063,354**
Operation (2019 Onward)	Individual Income Tax		$71,738
	Total Operation		**$71,738**

Source: Chmura Economics & Analytics

6. Conclusion

In conclusion, the Atlantic Coast Pipeline will generate significant economic impact in three states along the pipeline in West Virginia, Virginia, and North Carolina. From 2014 through 2019, capital spending on ACP could generate an annual average of $456.3 million in economic impact (including direct, indirect, and induced) for the three-state region, supporting 2,873 jobs per year. The cumulative impact of construction is estimated to be $2.7 billion that can support 17,240 cumulative jobs in the three-state region. From 2019 onward, ongoing operation of the pipeline project could produce a total of $69.2 million in annual economic impact (including direct, indirect and induced) in the three-state region, supporting a total of 271 jobs annually. Ongoing operation can generate annual tax revenue of $418,443 from 2019 onward for the three state governments. Capital expenditure can also generate $25.0 million in total tax revenue from 2014 through 2019.

Economic impact in each individual state varies, depending on a set of factors—such as the length of the pipeline in each state, and how many compressor stations, M&R stations, other facilities, and the number of employees located in each state. The tax revenue for state governments also depends on the tax rate for each jurisdiction.

More importantly, with the booming natural gas exploration and extraction industry in the United States, power companies are increasing usage of natural gas for electricity generation. Natural gas is an environmentally responsible alternative to coal, since there is much less greenhouse gas emission. Another advantage is that abundant natural gas supply keeps prices low for consumers. The trend is that natural gas is playing an increasingly important role in supplying American electricity. Natural gas pipelines such as the Atlantic Coast Pipeline are a critical component to ensure dependability of the energy infrastructure in West Virginia, Virginia, and North Carolina.

Appendix: Impact Study Glossary

IMPLAN Professional is an economic impact assessment modeling system. It allows the user to build economic models to estimate the impact of economic changes in states, counties, or communities. It was created in the 1970s by the Forestry Service and is widely used by economists to estimate the impact of specific events on the overall economy.

Input-Output Analysis—an examination of business-business and business-consumer economic relationships capturing all monetary transactions in a given period, allowing one to calculate the effects of a change in an economic activity on the entire economy (impact analysis).

Direct Impact—economic activity generated by a project or operation. For construction, this represents activity of the contractor; for operations, this represents activity by tenants of the property.

Overhead—construction inputs not provided by the contractor.

Indirect Impact—secondary economic activity that is generated by a project or operation. An example might be a new office building generating demand for parking garages.

Induced (Household) Impact—economic activity generated by household income resulting from direct and indirect impact.

Multiplier—the cumulative impact of a unit change in economic activity on the entire economy.